Claims:

1. A method for controlling the congestion management and the scheduling of transmission link capacity in packet-switched telecommunications, in which method

- digital information is transmitted as constant or variable-length packets,
- identifier data is attached to the packets, on the basis of which the packets are divided into at least two different service level classes,
- on the basis of the service level class data, each packet is routed to one of the FIFO queues (3 - 5), which are one for each service level class,
- at least one service level class is such that identifier data is attached to the packets belonging to it, with the aid of which the packets are divided into at least two internal sub-groups (.e.g., drop precedence) in the service level class,
- the packets belonging to the same service level class form a flow, in which the transmission order of the packets is retained,
- the available capacity of the outgoing link or links of the system is scheduled (1) for the service-level-class-specific FIFO queues using a weighting-coefficient-based scheduling method, a priority-based [sequencing] {scheduling} method, or a combination of these methods,
- congestion in the service-level-class-specific FIFO queues is limited by dropping or marking (ECN, Explicit Congestion Notification [2]) packets in the queue or arriving in the queue,

characterized in that the packet-specific priority value in the priority-based scheduling and/or the weighting coefficient in the weighting-coefficient-based scheduling is defined from the joint effect of a variable q and a variable vector x and that the selection of the packets within a specific service level class, to which dropping or marking will be applied in a congestion situation, are defined from the effect of the variable vector x, in which the variable q is defined from the service level class (CoS), to which the traffic represented by which the packet in question belongs, and the variable vector x is formed of the results provided by measurement (2) applied to the traffic flow representing the service level class being examined, or of variables derived from the relevant results, in which the measurement results depend on temporal variation in the

data transmission speed of the traffic representing the traffic flow being examined, and on the distribution between the different sub-groups of the packets representing the traffic flow being examined.

2. The method according to Claim 1 is characterized in that the temporal variation in the data transmission speed is depicted using a double-value variable, which states whether the number of bits transmitted during an arbitrary monitoring interval T from the past to the present is less than CIR x T + CBS, in which CIR is the transmission band available to the service level class being examined (committed information rate [bit/s]) and CBS is the greatest permitted burst size (committed burst size [bit/s]).

3. The method according to Claim 1 is characterized in that the SFQ (Start-time Fair Queuing [1]) method is used as the weighting-coefficient-based scheduling method.

4. The method according to Claim 1 is characterized in that the WFQ (Weighted Fair Queuing [1]) method is used as the weighting-coefficient-based scheduling method.

5. The method according to Claim 1 is characterized in that the WRED (Weighted Random Early Detection [3, 4]) method is used as the congestion limitation method controlled by the variable vector x.

6. The method according to Claims 1 and 2 is characterized in that the information contained in the variable vector x is formed using the Token Bucket method [7].

7. Equipment for controlling the congestion management and scheduling of transmission link capacity in packet-switched telecommunications, in which the equipment includes

- means for receiving constant or variable-length packets carrying digital information,
- means for reading the identifier data attached to the packets, on the basis of which the packets can be divided into at least two different service level classes,
- means for dividing the packets into at least two different service level classes,
- a FIFO queue for each of the service level classes,
- means for routing a packet in the FIFO queue (3 - 5) corresponding the relevant service

level class, on the basis of the service level class data,

- means for reading identifier data attached to the packets, on the basis of which the internal sub-group (e.g., drop precedence) of the service level class, to which the packet in question belongs, can be determined,
- a scheduler (1) for scheduling the capacity available to the outgoing link or links from the system to the service-level-class-specific FIFO queues, using a weighting-coefficient-based scheduling method, a priority-based scheduling method, or a combination of these,
- means for sending packets to the outgoing link or links, in a transmission order defined by the scheduler,
- means for limiting the congestion of the service-level-class-specific FIFO queues (3 - 5), by dropping or marking (ECN, Explicit Congestion Notification [2]) packet in a queue or arriving in a queue,

c h a r a c t e r i z e d in that the equipment includes means, with the aid of which a packet-specific priority value can be defined in priority-based scheduling and/or a weighting coefficient can be defined in weighting-coefficient-based scheduling, on the basis of the joint effect of a variable q and a variable vector x, and with the aid of which means the selection of the packets within the service level class, to which dropping or marking is applied in a congestion situation, can be defined from the effect of the variable vector x, in which the variable q is defined from the service level class (CoS), to which the traffic represented by which the packet in question belongs, and the variable vector x is formed of the results provided by measurement (2) applied to the traffic flow representing the service level class being examined, or of variables derived from the relevant results, in which the measurement results depend on temporal variation in the data transmission speed of the traffic representing the traffic flow being examined, and on the distribution between the different sub-groups of the packets representing the traffic flow being examined.

8. The equipment according to Claim 7 is characterized in that the equipment includes means, with the aid of which a double-value variable can be formed, which states whether the number of bits transmitted during an arbitrary monitoring interval T from the past to the present is less than CIR x T + CBS, in which CIR is the transmission band

available to the service level class being examined (committed information rate [bit/s]) and CBS is the greatest permitted burst size (committed burst size [bit/s]).

9. The equipment according to Claim 7 is characterized in that the equipment includes means for performing weighting-coefficient-based scheduling using the SFQ (Start-time Fair Queuing [1]) method.

10. The equipment according to Claim 7 is characterized in that the equipment includes means for performing weighting-coefficient-based scheduling using the WFQ (Weighted Fair Queuing [1]) method.

11. The equipment according to Claim 7 is characterized in that the equipment includes means, with the aid of which congestion limitation controlled using the variable vector x can be performed using the WRED (Weighted Random Early Detection [3, 4]) method.

12. The equipment according to Claims 7 and 8 is characterized in that the equipment includes means for forming the information contained in the variable vector x using the Token Bucket method [7].